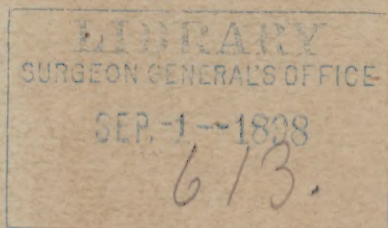


Bullard (Wm N.)  
With most sincere regards.

THE RELATION OF TEA DRINKING TO  
DISORDERS OF THE NERVOUS  
SYSTEM.

BY WILLIAM N. BULLARD, M.D.  
OF BOSTON.









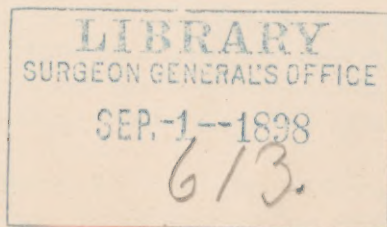
THE RELATION OF TEA DRINKING TO  
DISORDERS OF THE NERVOUS  
SYSTEM.

---

By WILLIAM N. BULLARD, M.D.

OF BOSTON.

Read at the Annual Meeting of the Massachusetts Medical Society,  
June 7, 1887.







## THE RELATION OF TEA DRINKING TO DISORDERS OF THE NERVOUS SYSTEM.

---

THE action of tea, as generally drunk, upon the system is twofold, (1) mechanical and (2) physiological. It acts mechanically upon the stomach through the bulk of fluid introduced, causing, when taken in large quantities, a certain distention, and it also, thus taken, acts to produce, aside from any chemical effect, a mechanical diuresis. As usually swallowed also, that is, hot and almost boiling, it acts as a direct irritant to the mucous membrane of the stomach, tending to bring on a condition of gastric catarrh (Lauder Brunton) and likewise as a powerful stimulant to the heart, both directly through the diaphragm and indirectly through stimulation of the gastric nerves.

The physiological action of tea is less well known. That it is in large doses a cerebral stimulant there is no question, but beyond this the exact method of its action upon the nervous system and how far each of its constituents plays a part therein, still remains undetermined. Much more is clear in regard to its action on the digestive organs, and had I time I should be glad to place before you the results of some of the extremely interesting experiments made by late investigators. As it is I can only refer to them in the most hasty way, before passing on to the proper subject of this paper.

In the first place, Dr. Roberts has found that tea has a strongly inhibitory action upon the salivary digestion, even when in very minute proportion, completely paralyzing

the action of the saliva. This he supposed to be due to the action of the tannin. This action may be partially avoided, either by drinking the tea after the meal in such a way that the salivary digestion has taken place before the ingestion of the tea, or by the addition of a little carbonate of soda, which seems to enable the saliva to act. The deterrent effect of tea upon the gastric digestion is well known. Aside from any irritating action upon the gastric mucous membrane, it uniformly retards both peptic and pancreatic digestion, and in this way exerts a very strong injurious influence over the whole system. According to the investigations of Dr. James W. Fraser, very lately published, it retards "the digestion and absorption of all the nitrogenized proximate principles of dietetic substances when peptic and pancreatic digestion are taken together."

From these physiological data it is easy to see what effect we should naturally expect from the abuse of tea. How these expectations are verified clinically I have already in part endeavored to show in regard to one class of cases.

More than a year ago, in April, 1886, I published a short paper containing an account of some investigations on the subject of chronic tea poisoning. At that time I had examined one hundred and sixty-three cases of tea drinkers, mostly women, and also for purposes of comparison one hundred and fifty-eight persons in whom symptoms existed more or less closely resembling those caused by tea poisoning, but in whom I was not inclined to attribute the symptoms to the abuse of tea. The results which I arrived at from that investigation were as follows :

I. That the action of tea is cumulative.

II. That its action is more pronounced on the young and on those subject to anæmia or in a depressed physical condition, although persons otherwise healthy not infrequently show toxic symptoms.



III. That among the class of people under consideration,<sup>1</sup> who as a rule use medium grades of Oolong and Souchong (English Breakfast Tea), the average amount needed to cause toxic symptoms is a little less than five cups per diem.

IV. That chronic tea poisoning is a frequent affection, and that its most common symptoms are loss of appetite, dyspepsia, palpitation, headache, vomiting and nausea, combined with nervousness and various forms of functional nervous affections, hysterical or neuralgic. These symptoms are frequently accompanied by constipation and pain in the left side or cardiac region.

These results have thus far only been confirmed by further observation and examination of this class of tea drinkers.

But it is not on these as a whole that I desire to dwell. My special object to-day is to present to you as clearly and definitely as possible the relation which exists between long-continued or chronic tea drinking and various forms of nervous derangement. First, however, I desire to state distinctly that in what follows reference is made only to *chronic* tea drinkers. I do not intend to discuss to-day the symptoms produced by acute tea poisoning, that is, those following the imbibition of a single large dose of tea or of a few such doses; nor do we refer to those occurring in professional tea tasters. On the contrary, those cases we are considering belong to that large class, mostly composed of women, who for weeks, months or years are accustomed to drink daily a considerable amount of tea, often without taking a proper supply of other nourishment, and frequently when they are from other causes in an exhausted or anæmic condition. And here we beg leave to emphasize a fact, which may perchance seem to some to be almost self-

<sup>1</sup> Those who applied for medical treatment at the Out Patient Department of the Carney Hospital or at the Women's Room in the Boston Dispensary.

evident, but which yet has apparently not been clearly comprehended by some of the more recent writers on this subject, and this is, that the effect of tea varies much in different persons according to their physical condition and to other circumstances, and again in the same person at different times. On those of sedentary habits, or of weak constitution, tea has undoubtedly a stronger influence than on those who are constantly engaged in active exercise in the open air and who are physically vigorous. Moreover, much depends on the amount of food taken with the tea, or at other times. Many women drink their tea, not only with their meals, but at other times also, thereby increasing its deleterious influence, while not a few, and these are the cases in which it specially shows its bad effects, use the tea as a stimulant to support themselves for their daily work while they take little or no other food. The amount of tea taken in this way which will cause unpleasant symptoms is often much smaller than that which can be taken in a proper manner without any evil results. Again, as people become weak or anæmic from overwork, from want of fresh air, or from any other cause, the amount of tea which they could previously take with impunity exerts its toxic action upon the enfeebled system, so that the same person may at different times and under different circumstances be variously affected by the same amount.

These things being premised, we will pass to the consideration of the special subject of this paper.

It is the great prominence of functional affections of the nervous system, which in combination with the other symptoms, gives its peculiar character to the symptom-complex of tea poisoning. It is precisely these (functional) affections of the nervous system, which, when they assume a prominent position in connection with the ordinary symptoms of dyspepsia, should lead us to consider the probability of the toxic action of tea. What these symptoms are, I

will endeavor to state. So far as my personal observations go, they are always functional; but it is not impossible that a long-continued imbibition of very large doses of tea after the premonitory symptoms had been neglected, might, in addition to other causes, eventually help to produce some organic lesion in those previously predisposed. But of this I have personally seen no evidence.

The first sign of disorder of the nervous system in chronic tea drinkers is their general restlessness and nervousness. The normal condition of the nervous system is disturbed and replaced by a condition of hyper-excitability or of less stable equilibrium. This is shown by their want of calmness, their general restlessness and irritability, and the desire to be constantly moving, while at the same time there is a subjective sensation of loss of self-control and of inability to act slowly. Such persons are subject to exaggerated effects from ordinary impressions; they are easily startled, jump at unexpected noises or sensations, or, in other words, react too freely to slight external influences. The moral balance is also affected. This general condition occurs in nearly all those who have been for any length of time under the toxic influence of tea. Indeed, so universal is it in persons of this class that I should hesitate to make a diagnosis of chronic tea poisoning in a case where it was absent, unless the other symptoms were so marked as to render the affection unmistakable. As the toxic effect of the tea increases, this symptom or series of symptoms is apt to increase in severity and may assume some definite form or develop in some special direction. Some patients, for example, labor under a constant fear that something terrible is about to happen, though without any idea as to the nature of the terrible event which is to occur; others, again, say that they become excited whenever they are in a crowd, feeling as though they were afraid of some one, although they know all the while that this sensation is wholly causeless. From



these conditions it is but a step to the various forms of mental weakness and to hysteria.

The next most frequent symptom of nervous origin is palpitation, which was noted in forty-nine per cent. of our cases, and which probably occurred in a still larger proportion. It is but fair, however, to state that this symptom is not complained of in some otherwise well-developed cases, and that at the time of examination no irregularity of the heart-beat in them could be detected.

These two symptoms, nervousness and palpitation, are, however, common to a large variety of affections, and may be produced in many different ways. In chronic tea poisoning they may be caused either directly by the direct action of the tea upon the nervous system, or indirectly through the production of gastric or intestinal dyspepsia. Nervousness, moreover, is so common a concomitant of anemia or physical depression from any cause that, considered by itself, it could not be judged as in any way distinctive, and it is only from its undue development in proportion to the other symptoms that it acquires value as a factor in the diagnosis. The last clause applies also to palpitation, which frequently occurs, though perhaps not to quite the same extent, in simple dyspepsia, where tea is out of the question. Inasmuch, then, as these two symptoms, nervousness and palpitation, are of such common occurrence in other affections, and, as in the case of the latter symptom, it is not certain that all cases are of nervous origin, we shall for the present make a distinction between them and the more definite symptoms of nervous disorder which accompany chronic tea poisoning, and consider the latter by themselves, only placing among them the more extreme cases of nervousness, such as those already mentioned, where some special form is assumed.

In considering therefore the proportion of cases in which symptoms of nervous disorders occur, we shall leave out



of account those in which nothing more definite than nervousness or palpitation was noted. For while unquestionably many of these cases, probably by far the greater proportion, really belong under this heading, inasmuch as it is impossible with our present knowledge to determine how far this is the case, it seems advisable to consider in this class only those symptoms about which no doubt can be expressed. We shall likewise omit from our classification among cases which have special nervous symptoms all those in which bilateral headaches occurred, unless there appear some distinct reason for the belief that these headaches were either neuralgias proper or otherwise of true nervous origin.

#### CASES WITH SPECIAL NERVOUS SYMPTOMS.

The total number of cases of this class of which I have records is fifty. The principal divisions are as follows :

Neuralgia	20.
Hemicrania	11.
Migraine	8.
Hysteria	6.
Mental Asthenia	3.
* (Tremor	5.)

By far the most common form of special nervous disorder found in chronic tea drinkers is neuralgia, and of this I have records of twenty cases. The neuralgia does not appear to have any special tendency to affect any particular nerve or group of nerves, but it apparently attacks the locus minimæ resistantiæ, being found in one person in one portion of the body, in another person in some other. The most frequent form was facial neuralgia, which occurred in six cases. Intercostal neuralgia was found in five, occipital neuralgia (including occipital headaches) in five, and sciatica in four. General neuralgia was found in two; brachial, abdominal, lingual and post-auricular in one each.

\* See later.

The average number of cups of tea drunk in each case was :

Intercostal Neuralgia	5 cases.	4.4 cups per diem
Occipital Neuralgia	5 cases.	5.5 " " "
Facial Neuralgia	2 cases.	6.25 " " "
Sciatica	2 cases.	5.25 " " "
General Neuralgia	1 case.	8.00 " " "
Brachial Neuralgia	1 case.	5.00 " " "
Abdominal Neuralgia	1 case.	6.00 " " "
Post-auricular Neuralgia	1 case.	0.50 " " "
Total average		5.40 " " "

That all these cases of neuralgia are directly due to tea we do not believe; indeed in some of the cases there is proof of other causes: but in all of them there is reason to suppose that the tea has played some part. In a large proportion of these cases there was either neuralgia in more than one part of the body, or else some other symptom directly referable to the nervous system.

I will here relate one of the more typical cases.

CASE I.—A woman, 23 years of age, came to the Out Patient Department of the Carney Hospital on the 30th of March, 1885. She was suffering at that time from abdominal neuralgia, a dull pain in the pelvic region and pain over the left breast. Palpitation. Constipation. Appetite good. Is nursing a child fifteen months old. She drinks tea, five cups or more a day, taking it at every meal and between meals also. No coffee.

Physical examination shows some tenderness over the left half of the abdomen. Nothing abnormal detected about the heart, or elsewhere. Diagnosis: Hyperlactation. Tea. Abdominal Neuralgia. Treatment: Iron. Liquorice Powder. To stop tea. To wean the baby.

This patient was seen again in March, 1887, two years later. She stated that she was decidedly better for a considerable time after her visit to the Hospital. She had

stopped the tea as directed, though she still took one cup occasionally. She had had some pain in the left side ever since she was at the Hospital, though this had been better for some time after. One year ago she had another child.

She is subject to pains all over at times, but especially in the arms and on the right side of the body. She has now a right facial neuralgia of a week's standing, due to a carious tooth. She has no headaches and but slight dyspeptic trouble. Palpitation however is severe. She is very nervous and easily frightened.

How much of the neuralgia present in this case was due to the influence of tea and how much was due to other causes, anæmia from excessive nursing and a naturally neurotic disposition, it is impossible to say. It is only by collecting a large number of cases like the foregoing and by collation and comparison thereof, that we can arrive at any reliable conclusion. The persistence of the nervousness, palpitation and neuralgia so long after the giving up of the tea proves of course that the tea is no longer in any part an active cause of their presence. But on the other hand there can be but little question that it has in combination with other factors aided in bringing the system into a condition of diminished or depressed nervous vitality, from which it has not been able to recover while under unfavorable surroundings.

Next to neuralgia the most frequent form of special nervous disturbance met with in cases of chronic tea poisoning is migraine and hemicrania. We shall consider these separately, classing under migraine all bilateral headaches, accompanied by nausea or vomiting, not apparently connected with gastric difficulties and recurring with more or less frequency.

*Migraine.*—We have under this head five reliable cases. It is on account of the great difficulty of determining the precise source of these headaches that I separated them

from the group of hemicrania: yet the same rules apply in a general way to both.

CASE II.—Woman, 60. First seen May 18, 1885. Complains of dull frontal headache, which is followed by general weakness of all the muscles, so that she can scarcely move about. The headache is accompanied by nausea, but there is no vomiting. She is subject to attacks of vertigo and is afraid of falling. Appetite poor. Bowels irregular. Drinks *strong* tea—"pure black"—three times a day and occasionally between meals. Mother has attacks of sleep, which last so long, that she has to be awakened.

May 26, 1885. Improved.

Patient was next seen in June, 1887. States that the headaches ceased entirely, but have lately recommenced again under the form of a right hemicrania. There is no nausea or vomiting with the headaches, but she is weak and has to lie down when they come. Dizziness slight, much less than formerly. Appetite fair. Bowels regular. Stopped the tea as directed in 1885, and, otherwise than the headaches, which have lately reappeared, has been perfectly well since. Drinks no coffee. Never had neuralgia or rheumatism.

(This case, which has been placed under migraine, should perhaps, in view of the later history, rather come under the head of hemicrania. It illustrates the closeness of the relation between the two.)

*Hemicrania*.—Of this we have eleven cases accompanying tea poisoning, not including one case in which the patient drank both tea and coffee. The connection between hemicrania and tea is certainly a very close one. Alcott, as far back as 1839, called attention to tea as a cause of migraine. Whether it be so or not, which I consider doubtful, there can be no question but that there is a close relation between this affection and tea drinking. Since my attention has been drawn to the subject I cannot recollect



having seen a single case of hemicrania in which the patient did not drink tea in greater or less quantity.

Hemicrania existed in eleven per cent. of our tea patients. In some of these it could not have been entirely due to the tea, inasmuch as it had been inherited or had existed before the tea drinking began. In spite of Alcott's statement and those of other writers in this direction, I cannot help feeling that the influence of tea as a *causative* factor in hemicrania has been exaggerated. That it may and in certain cases does tend to increase the frequency and severity of the attacks is possible. But the evidence tends much more in a different direction. It points to the fact that hemicrania or the condition of the system which exists in hemicrania is one which specially craves the momentary stimulus imparted by tea, and causes a demand for it which is easily gratified. There is in my mind but little doubt that the relationship between tea and hemicrania is due rather to the demand of the nervous system in these patients for a mild stimulant rendering them more inclined than the average to drink tea, than to any causative effect which the tea may exert. The average amount of tea drinking in our cases of hemicrania was 4.5 cups (seven cases), or omitting one case in which the patient was very much debilitated, having apex catarrh and nursing at the same time a baby seven months old, and where the amount drunk was only two cups per diem—an exceptionally small amount to have any serious effect—the average was 4.9 cups.

*Paræsthesia.*—The only other form of sensory neurosis, which has been present in any of our cases, is paræsthesia. This occurred in two cases, in one of which numbness of the hands and feet was complained of; in the other, burning of the palms and soles and a sensation as of cold water pouring over the head and forehead. In the latter case the symptoms were promptly cured by phosphoric acid and the omission of tea. In the former case the symptom men-

tioned in company with neuralgia, palpitation and general nervousness, continued for two years, the patient not having given up the use of tea and not having been under medical treatment. These two cases are not of sufficient importance to lead us to suppose in the absence of other evidence that the tea had any direct connection with the paresthesia. The amount drunk was not excessive in either case, in one only 4, and in the other 4.5 cups per diem.

#### MOTOR NEUROSES.

There is no evidence in any case that I have thus far seen that tea as drunk in the cases we have under consideration has any marked effect in producing motor neuroses. There is on the other hand no question but that, when such neuroses exist, if they be not organic, tea should be carefully avoided as tending to further and promote their development. This is especially the case in chorea and all allied affections.

We find among our cases one in which the patient, a boy 16 years old, began to have choreic movements two years after he had given up the tea (green tea) which he had previously drunk in excess. This was unquestionably a mere coincidence. Among all the cases of chorea which have come under my personal observation within the last three years, and of which very full and careful records have been kept—seventy-five—not one has been found in which tea drinking could be assigned as the cause.

*Tremor* occurred in five cases. Two of these were probably cases of organic disease, two had mental symptoms and others of a character unusual in chronic tea-poisoning, leaving only one in which there seemed a fair probability that the tremor might have been due to the tea. There is no question but that tremor due to tea occurs in tea tasters and is frequent in cases of acute tea poisoning, and Skryter of Halifax relates a very interesting case of

delirium tremens caused by chewing tea, but in the class of cases of which I treat here I have thus far failed to find any evidence of its occurrence.

*Muscular cramps* or tonic contractions of muscles occurred in three cases. In none of these was the history sufficiently definite to enable us to refer them to the tea.

#### HYSTERIA AND NEURASTHENIA.

*Neurasthenia*.—This term serves to cover a number of cases having more or less indefinite symptoms and standing as it were midway between simple nervousness and marked hysteria. The word, as Dr. Wood states, "denotes not a distinct disease but a condition of the body." It is commonly used to comprise those indefinite forms of functional nervous exhaustion, which cannot as yet be placed in any other category. As our knowledge of functional nervous conditions advances and we are enabled to classify them more accurately, more and more cases will be removed from the domain of neurasthenia and placed under some more exact and appropriate title. As things are now it is impossible to draw any accurate line between those cases which should naturally be classed here and those which should more properly fall under other headings. Many cases of exaggerated nervousness are named neurasthenic, and many cases of slight or even moderately advanced hysteria come under this head. For this reason we shall not consider any cases here, but shall try to define and classify more accurately all those cases which were thus designated in the records or elsewhere.

(Of the four cases which were placed originally under this title two fairly belong under the head of hysteria and two to the class of exaggerated nervousness to which I have already referred. The latter cases point to a certain mental asthenia, and if more strongly developed might justly be placed among the milder forms of monomaniacal weakness.)

*Hysteria*.—Under this heading I have placed six cases, including all those of functional paralysis.

I. Woman, 60. Drinks three to four bowls of tea per diem, though she has lately diminished the quantity to two or three bowls. Is emotional, cries very easily. Globus hystericus. Temporary paresis of left arm accompanied by pain.

II. Woman, 50. Drinks strong tea, six cups or more per diem. Has functional paralysis of the vocal cords.

III. Woman, 34. Came to Carney Hospital, May 6, 1885. Had then been emotional and hysterical for two years. Complained at that time of nervousness, general weakness, palpitation and loss of appetite and was subject to bilateral frontal headaches. Drank tea at each meal and between meals. Treatment: To leave off drinking tea. Dilute phosphoric acid.

Was next seen two years later in May, 1887. States that she got well after her visit to the Hospital and has been well since. Slept better and was not so nervous after leaving off the tea, which she did completely for a time. Now takes two cups of tea per diem with meals, sometimes replacing one with a cup of coffee. Except that she is slightly nervous and has a little dyspepsia, is perfectly well. Never had either rheumatism or neuralgia.

IV. Woman, 45. Always nervous, but lately worse, and irritable with the children and other people. Feels as though she wanted to cry. Subject to hemorrhoids on the left side. Pain just below the right scapula and also in the left side. Occasional palpitation. Appetite fair. Constipation. Occasional severe pain over the epigastrium, otherwise no dyspeptic symptoms. Youngest child three years old. No uterine symptoms. Drinks about five cups of tea a day; coffee rarely. Is pale, thin and weak. Tongue and lips pale. Heart normal in size—systolic



souffle over pulmonary artery. Nothing else abnormal detected anywhere.

The other two cases are of the same general character as the preceding. In one of them, among the prominent symptoms were lingual neuralgia and functional aphonia.

These cases are of considerable interest as pointing to the influence of tea on hysterical women. That it exerts a specially deleterious effect on the majority of this class there can be little doubt. That a few large doses of strong tea act to stimulate the nerves is well known, but the depressing effect of regularly repeated small doses continued over a considerable length of time has been less frequently emphasized.

Certainly the number of those suffering from hysteria among our tea patients was an uncommonly large one, 6 out of about 170, that is one out of 28, and this from a general clinic and not from one specially devoted to nervous disease.

In cases of this class I believe it to be of the first importance that either all tea should be strictly prohibited, or that it should be given only on the order of the physician and with great circumspection. I regard it as extremely probable, though not yet absolutely proved, that in all cases where the nervous system is deranged, as in hysteria and the allied affections, the action of tea is more powerful than on the normal subject and its influence for good or evil increased.

*Mental Asthenia.*—In those cases of nervous instability in which the mental symptoms are especially prominent, we are naturally led to be more than ordinarily cautious. The general principles which apply in cases of hysteria hold good also here. Happily most of these cases, though extremely trying both to the family and to the physician, will, under proper care and treatment, attain an ultimate cure. Chronic by nature, many of these cases test the skill and patience even of the specialist.

Having now given some of the data gathered from our observations on chronic tea poisoning in regard to the frequency with which it is accompanied by the various forms of neurosis, it behooves us to state as clearly as possible our opinion in regard to the relation existing between the two. The conclusions which we have reached are as follows:

1. Chronic tea poisoning produces a condition of irritability or hyperexcitability of the nervous system, and does this both directly by the action of the tea upon the nervous system and indirectly by the production of gastric derangement.

2. Tea taken frequently and in moderate doses for a considerable period of time tends therefore to place the nervous system in a condition in which it is more easily affected injuriously by slight external influences. It therefore favors the production of many forms of functional neuroses, and, if such neuroses already exist, aids in their continuance.

3. There is no evidence that tea taken in the manner described causes any organic nervous lesion, but it is probable that if such nervous lesion should exist, tea thus taken might tend to cause an aggravation and continuance of certain symptoms.

4. There is no evidence that chronic tea poisoning produces unaided any serious functional neuroses in persons not in any way specially predisposed thereto. It does, however, in the manner above described act as an important factor in the production of neuralgia, hysteria and allied affections.

5. When taken constantly in very large doses dyspeptic symptoms usually intervene before irreparable harm is done to the nervous system.

6. In hemiparesis and possibly some other functional neuroses there is probably a craving on the part of the nervous system for a slight stimulation, which is better

afforded by tea than by any other equally accessible article, and for this reason patients with hemicrania are so frequently tea drinkers.

In conclusion I beg to say that I should be glad to receive information from members of this Society in regard to the frequency with which tea is used among their patients and in the various places where they practise, and of the results which have come under their observation.











